POST-CYCLONE AGROFORESTRY IS HELPING TO SOLVE FOOD INSECURITY IN VANUATU

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In the wake of Cyclone Pam, Live & Learn Vanuatu set about ending food insecurity in some of the country's worst affected communities. Seedlings, reared in nurseries, replaced the crops that were washed away in the disaster. The implementation of agroforestry plots, plant tissue grafting, and the introduction of carrots and broccoli to the islands are being hailed as important steps forward in the fight to end food insecurity.

Cover An agroforestry officer, community member and agriculture officer prepare the nursery in Finonge, Emae

The Republic of Vanuatu is made up of 82 islands, with a total land mass of 12,274 m^2 and a total population of 280,000. Approximately 70% of the population lives in rural communities and most are subsistence farmers. They depend entirely upon their farms for food and they sell their surplus produce as a source of income.

Cyclone Pam hit the islands in 2015 and badly damaged 80% of the country. In particular, southern Vanuatu was totally devastated by the cyclone, which swept away gardens, trees and houses. Agroforestry was identified by Live & Learn as well as by the Food Security Cluster, an organisation made up of individuals from the Department of Agriculture and Rural Development (DARD), NGOs, the private sector and FAO, as the best approach to improve food security.

Agroforestry is an intensive land-use management system whereby trees are grown amongst crops or in pastureland. Small island nations, like Vanuatu, find this technique very useful. Individuals can grow trees, vegetables and root crops such as mahogany, carrots and sweet potato, all on the same piece of land and still earn the same income as they would from two separate plots of land.

Agroforestry is an approach which has short – and long-term benefits; in just 2-3 weeks' time, a farmer can harvest their vegetables, in 3-4 months' time, they can harvest their root crops and in 5-6 years' time, they can harvest fruit from their fruit trees. In 15-20 years' time, timber can also be harvested from the trees. The agroforestry approach was implemented in 2016 in the provinces of Shefa and Tafea, the two areas most devastated by the cyclone.

Delivery of vegetable seedlings to priority areas

The ideology behind the agroforestry approach was not just to improve food security, but also to create long-term income opportunities for farmers. Two central nurseries and three hub nurseries were built in the Shefa province in 2016 with the help of Live & Learn Vanuatu. Trees such as mahogany, sandalwood and whitewood were grown. Cassava, taro and yam were the root crops reared at the nurseries and vegetables, such as pak choi, carrots and dwarf beans, were also grown. The central nurseries were used to supply hub nurseries with planting materials. The two central nurseries were for the Department of Agriculture and Rural Development (DARD) and the hub nurseries were for the Department of Forests (DoF). Both central nurseries were based at the department's headquarters at Tagabe. In the Tafea province, a further three hub nurseries and another central nursery were established. The hub nurseries are smaller than central nurseries and are used by the local community. The central nurseries were fully

Above The farm manager displays the grafting techniques to all visiting farmers

operated by the government, whilst the hub nurseries were run by knowledge hub committees – groups of community members guided by DARD and DoF.

Seven priority communities – Finonge in Emae, Pele in Tongoa, Paunangisu in Efate, Middle Bush community in Tanna, Port Patrick community in Aneityum and Ipota community in Erromango – were chosen to participate in this project. Across these communities in the provinces of Shefa and Tafea, men, women, youth and chiefs were elected to make up the knowledge hub committees and oversee the day-to-day operations of the nurseries. These committees acted as the first point of contact between the government and the communities. The committees also accepted material, social and financial support from Live & Learn and the government, which they disseminated to the community members.

The committees worked tirelessly with the DARD, the DoF and Live & Learn Vanuatu officers to establish the hub nurseries and make them functional. With the island suffering during the El Niño dry season, the team built irrigation systems at all of the nurseries to water their precious seedlings. The committees oversaw the day-to-day operations of the nurseries until the seedlings were old enough for distribution. In total, 50,325 trays of vegetable seedlings and 30,252 trays of tree seedlings were distributed across the seven priority areas. A total number of 10,000 individuals benefited from the project.

A strategy with multiple benefits

With the nurseries effectively up and running in all priority areas, a demonstration plot was established at each one. The communities were taken to the demonstration plots and given first-hand training on the different spacing and plant varieties that were integrated into the plot. The crops that were planted were vegetables, root crops and tree species. The committees not only thought about the present, but also considered what to plant for when the tree

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Below Central nursery at the Department of Agriculture and Rural Development in Efate

canopies closed up in the future. With limited sunlight, most crops will not grow, however, the committees collected wild yams to plant in anticipation of the changing agroforests.

Integrated into the training was a technique called grafting. Grafting is a horticultural method whereby the tissues of one plant are joined to the roots of another, at the stem. Studies have shown that Vanuatu has a native lemon tree that is more resilient to storms and natural disasters than the more common, introduced species, because it has a taproot that grows deeper into the ground. Participants in the project were shown how to graft the wild lemon tree variety's roots to the introduced lemon tree variety's stem to create a more cyclone-resistant plant. "I am so happy to be part of the training and especially the grafting session. I wanted to learn the grafting technique long ago but there was no training available. This is a bonus for us farmers, to learn and apply this skill to my farm. This will help save my

Above Agriculture officers prepare the distribution of planting materials

farm in times of disaster," said John Willie, a participant in the project.

Another line was the introduction of nutritious carrots and broccoli. The Walavea community in Epi had never seen or grown a carrot before the introduction of the project. Having the opportunity to grow carrots in the nurseries, as well as broccoli, was another new step forward for food security in Vanuatu and enabled the community knowledge hub to generate additional income. "I have never seen or grown carrots in my entire life. This is the first time I have ever grown and harvested carrots on Epi Island. When I first saw the broccoli leaves, I thought they were Chinese cabbages. I am so proud of this achievement and this has triggered our interest to grow more carrots and broccoli in our own farms, to sell at the market. All of a sudden, there is a demand after the first trial in the nursery," said a committee member from the Walavea Knowledge Hub on Epi Island.

A viable technique

Overall, the approach taken by the project proved that agroforestry is a viable technique for small island nations like Vanuatu to improve food security. This approach allows even those with limited resources to grow their own food and, in the future, even building materials. With everything planted in one plot, labour requirements are reduced when compared to traditional farming systems where crops are grown in separate fields. Even those in Vanuatu's urban settlements, such as Luganville or Port Vila, can visit DARD and the DoF for information about how they can engage in agroforestry techniques to end their food security worries.

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